

## **AMENDMENTS TO THE CLAIMS**

### **Listing of claims:**

1. (Currently amended) A process for the preparation of a ketocarotenoid by culturing a genetically modified, nonhuman organism, which in comparison with the wild-type has a modified ketolase activity and a modified  $\beta$ -cyclase activity, and the modified  $\beta$ -cyclase activity is caused by a  $\beta$ -cyclase comprising the amino acid sequence ~~SEQ. ID. NO. 2~~ SEQ ID NO: 2 or a sequence derived from this sequence by substitution, insertion or deletion of amino acids, which has an identity of at least 70% at the amino acid level with the sequence ~~SEQ. ID. NO. 2~~ SEQ ID NO: 2.
2. (Original) The process according to claim 1, wherein a nonhuman organism is used which, as the wild-type, already has a ketolase activity, and the genetic modification causes an increase in the ketolase activity in comparison with the wild-type.
3. (Currently amended) The process according to claim 2, wherein for increasing the ketolase activity ~~the~~ gene expression of a nucleic acid encoding a ketolase is increased compared to the wild-type.
4. (Original) The process according to claim 3, wherein for increasing the gene expression a nucleic acid which encodes a ketolase is inserted into the organism.
5. (Original) The process according to claim 4, wherein, as a nucleic acid encoding a ketolase, a nucleic acid is inserted which encodes a ketolase comprising the amino acid sequence SEQ ID NO: 4 or a sequence derived from this sequence by substitution, insertion or deletion of amino acids, which has an identity of at least 70% at the amino acid level with the sequence SEQ ID NO: 4.
6. (Original) The process according to claim 1, wherein a nonhuman organism is used which, as the wild-type, has no ketolase activity and the genetic modification causes a ketolase activity in comparison with the wild-type.

7. (Original) The process according to claim 6, wherein a genetically modified organism is used which transgenically expresses a ketolase.

8. (Currently amended) The process according to claim 6 ~~or 7~~, wherein, for causing the gene expression, a nucleic acid which encodes a ketolase is inserted into the organism.

9. (Currently amended) The process according to claim 8, wherein a nucleic acid is inserted encoding a ketolase comprising the amino acid sequence ~~SEQ. ID. NO. 4~~ of SEQ ID NO: 4 or a sequence derived from this sequence by substitution, insertion or deletion of amino acids, which has an identity of at least 70% at the amino acid level with the sequence ~~SEQ. ID. NO. 4~~ of SEQ ID NO: 4.

Claims 10-62 (Canceled).

63. (Currently amended) A genetically modified, nonhuman organism, where the genetic modification,

A for the case where the wild-type organism already has a ketolase activity, increases the activity of a ketolase compared to the wild-type and

B for the case where the wild-type organism has no ketolase activity, causes the activity of a ketolase compared to the wild-type,

and where the genetic modification,

C for the case where the wild-type organism already has a  $\beta$ -cyclase activity, increases the activity of a  $\beta$ -cyclase compared to the wild-type and

D for the case where the wild-type organism has no  $\beta$ -cyclase activity, causes the activity of a  $\beta$ -cyclase compared to the wild-type

and the  $\beta$ -cyclase activity increased according to C or caused according to D is caused by a  $\beta$ -cyclase comprising the amino acid sequence ~~SEQ. ID. NO. 2~~ of SEQ ID NO: 2 or a sequence derived from this sequence by substitution, insertion or deletion of amino acids, which has an

identity of at least 70% at the amino acid level with the sequence ~~SEQ. ID. NO. 2~~ of SEQ ID NO: 2.

Claims 64-71 (Canceled).

72. (New) The process according to claim 7, wherein, for causing the gene expression, a nucleic acid which encodes a ketolase is inserted into the organism.

73. (New) The process according to claim 72, wherein a nucleic acid is inserted encoding a ketolase comprising the amino acid sequence of SEQ ID NO: 4 or a sequence derived from this sequence by substitution, insertion or deletion of amino acids, which has an identity of at least 70% at the amino acid level with the sequence of SEQ ID NO: 4.